AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application. The following amendments apply to the claims as amended on October 12, 2004 during the international phase of the application.

LISTING OF CLAIMS:

1. (Currently Amended) A method for controlling rock drilling

wherein a percussion device ~~(7,25)~~ belonging to a rock drill machine ~~(1)~~ delivers impact pulses to rock ~~(10)~~ through a tool ~~(12)~~ and wherein the rock drill machine ~~(1)~~ is simultaneously pushed against the rock ~~(10)~~ by means of a feed actuator ~~(3, 33)~~, the method comprising:

feeding a pressure medium to the feed actuator ~~(3, 33)~~ along at least one feed channel ~~(37, 38, 4, 5)~~;

feeding the pressure medium to the percussion device ~~(7, 25)~~ along at least one percussion pressure channel ~~(24, 13, 14)~~;

determining a penetration rate; ~~and~~

adjusting at least a percussion pressure on the basis of the penetration rate,

~~characterized by~~

conveying at least one pressure medium flow supplied to or from the feed actuator ~~(3, 33)~~ through at least one restrictor ~~(46)~~,

sensing the pressure of the pressure medium before the restrictor ~~(46)~~ and after the restrictor ~~(46)~~ in order to determine the penetration rate, and

adjusting the percussion pressure on the basis of the monitoring.

2. (Currently Amended) A method as claimed in claim 1, ~~characterized by~~ further comprising:

interpreting that the penetration rate has increased when, due to pressure drops, the pressure after the restrictor ~~(46)~~ is decreased relative to a reference pressure before the restrictor ~~(46)~~, and

decreasing the percussion pressure when the penetration rate increases.

3. (Currently Amended) A method as claimed in claim 1 ~~or 2~~, ~~characterized by~~ further comprising:

adjusting the percussion pressure in a predetermined manner with respect to the change of the penetration rate.

4. (Currently Amended) A method as claimed in ~~any one of the preceding claims~~ claim 1, ~~characterized by~~ further comprising:

decreasing the percussion pressure and the feed pressure in a substantially constant ratio when the penetration rate increases.

5. (Currently Amended) A method as claimed in ~~any one of the preceding claims~~ claim 1, ~~characterized by~~ further comprising:

measuring, by pressure sensors ~~(50, 51)~~, the magnitude of the pressure active before the restrictor ~~(46)~~ and the pressure after the restrictor,

delivering pressure data to a control unit ~~(52)~~,

determining, at the control unit, the penetration rate on the basis of the pressure data, and

adjusting, by means of the control unit ~~(52)~~, at least one electrically controlled valve ~~(31)~~ in order to decrease the percussion pressure when the penetration rate increases.

6. (Currently Amended) A rock drilling arrangement comprising:

a rock drill machine ~~(1)~~ including a percussion device ~~(7, 25)~~ arranged to generate impact pulses to a tool ~~(12)~~ to be connected to the rock drill machine ~~(1)~~;

a feed beam ~~(2)~~ whereon the rock drill machine ~~(1)~~ has been arranged;

a feed actuator ~~(3, 33)~~ enabling the rock drill machine ~~(1)~~ to be moved in the longitudinal direction of the feed beam ~~(2)~~;

a pressure medium system comprising: at least one pressure source; at least one pressure medium channel ~~(13, 14, 24)~~ leading to the percussion device ~~(7, 25)~~ ; at least one feed channel ~~(4, 5, 37,38)~~ connected to the feed actuator ~~(3, 33)~~ ; and means for adjusting a percussion pressure, ~~characterized in that~~ and wherein

at least one restrictor ~~(46)~~ is connected to at least one feed channel ~~(37)~~ of the feed actuator,

the arrangement comprises means for sensing the pressure active in the feed channel before the restrictor ~~(46)~~ and after the restrictor ~~(46)~~, and

the pressure medium arrangement is arranged to decrease the percussion pressure when the pressure in the feed channel after the restrictor ~~(46)~~ is smaller than the pressure before the restrictor ~~(46)~~.

7. (Currently Amended) A rock drilling arrangement as claimed in claim 6, ~~characterized in that~~ wherein

a first sensing channel ~~(47)~~ is connected to a section ~~(37)~~ of the feed channel residing before the restrictor ~~(46)~~ in the direction of flow and a second sensing channel ~~(48)~~ is connected to a section ~~(37')~~ after the restrictor,

the first sensing channel ~~(47)~~ is connected to a first pressure sensor ~~(50)~~ and the second sensing channel ~~(48)~~ is connected to a second pressure sensor ~~(51)~~,

the arrangement includes at least one control unit ~~(52)~~,

pressure data obtained from the first pressure sensor ~~(50)~~ and pressure data obtained from the second pressure sensor ~~(51)~~ are arranged to be conveyed to the control unit ~~(52)~~,

the control unit ~~(52)~~ is arranged to monitor a penetration rate on the basis of the pressure data obtained from the pressure sensors,

the control unit ~~(52)~~ is provided with a control strategy for adjusting the percussion pressure in a predetermined manner with respect to the penetration rate; and

the arrangement includes at least one valve ~~(31)~~ controlled by the control unit ~~(52)~~ for adjusting the percussion pressure.

8. (Currently Amended) A rock drilling arrangement as claimed in claim 7, ~~characterized in that~~ wherein

the control unit ~~(52)~~ is provided with a control strategy for adjusting a feed pressure in a predetermined manner with respect to the penetration rate, and the arrangement includes at least one valve ~~(44)~~ controlled by the control unit ~~(52)~~ for adjusting the feed pressure.

9. (Currently Amended) A rock drilling arrangement as claimed in claim 6, ~~characterized in that~~ wherein

the arrangement comprises at least one monitoring valve ~~(56, 71)~~ for adjusting the percussion pressure,

the monitoring valve ~~(56, 71)~~ comprising:

a body ~~(90)~~,

an elongated slide ~~(91)~~ having a first end and a second end and arranged to a space in the body ~~(90)~~ and movable in the longitudinal direction in said space,

at least one force element that is arranged to act on the first end of the slide ~~(91)~~ to move the slide ~~(91)~~ towards a first direction of travel ~~(B)~~, and

at least one controllable channel ~~(108)~~ that is arranged to open and close by the longitudinal movement of the slide ~~(91)~~,

the slide ~~(91)~~ has at least one collar ~~(95)~~,

a sleeve ~~(96)~~ is arranged around the slide ~~(91)~~,

the body ~~(90)~~ has a space, inside which the collar ~~(95)~~ and the sleeve ~~(96)~~ are arranged to move,

the outer rim of the sleeve ~~(96)~~ is sealed to the body ~~(90)~~ and the inner rim of the sleeve is sealed to the slide ~~(91)~~,

the sleeve ~~(96)~~ defines a first chamber ~~(97)~~ and a second chamber ~~(98)~~ on opposite sides of the sleeve ~~(96)~~, and said chambers ~~(97, 98)~~ are not connected to each other,

the first chamber ~~(97)~~ is connected at least to a first pressure channel, the second chamber ~~(98)~~ is connected at least to a second pressure channel, the sleeve

~~(96)~~ is arranged to move in the first ~~(B)~~ or the second ~~(A)~~ direction of travel depending on the pressure difference inside the chambers ~~(97, 98)~~, and

in one direction of travel, the sleeve ~~(96)~~ is arranged to act on the axial position of the slide ~~(91)~~ when abutting on the collar ~~(95)~~.

10. (Currently Amended) A rock drilling arrangement as claimed in claim 9, ~~characterized in that~~ wherein, in the monitoring valve ~~(56)~~ ,

the sleeve ~~(96)~~ is arranged to abut on the collar ~~(95)~~, on the same side as the force element,

the first chamber ~~(97)~~ is on the force element side of the sleeve ~~(96)~~ and the second chamber ~~(98)~~ is on the collar ~~(95)~~ side of the sleeve,

the first chamber ~~(97)~~ is connected to a sensing channel ~~(99)~~,

the second chamber ~~(98)~~ is connected to a reference channel ~~(100)~~,

the sleeve ~~(96)~~ is arranged to push via the collar ~~(95)~~ the slide ~~(91)~~ towards the first direction of travel ~~(B)~~, if the pressure of the sensing channel ~~(99)~~ is higher than that of the reference channel ~~(100)~~.

11. (Currently Amended) A rock drilling arrangement as claimed in claim 9, ~~characterized in that~~ wherein, in the monitoring valve, ~~(71)~~

the sleeve ~~(96)~~ is arranged to abut on the collar ~~(95)~~, on the opposite side of the collar ~~(95)~~ with respect to the force element,

the first chamber ~~(97)~~ is on the force element side of the sleeve ~~(96)~~ and the second chamber ~~(98)~~ is on the on the opposite side of the sleeve ~~(96)~~,

the first chamber ~~(97)~~ is connected to a reference channel ~~(100)~~,

the second chamber ~~(98)~~ is connected to a sensing channel ~~(99)~~,

the sleeve ~~(96)~~ is arranged to push via the collar ~~(95)~~ the slide ~~(91)~~ towards the second direction of travel ~~(A)~~, if the pressure of the sensing channel (99) is higher than that of the reference channel ~~(100)~~.

12. (Currently Amended) A rock drilling arrangement as claimed in ~~any one of claims 9 to 11~~ claim 9, ~~characterized in that~~ wherein, in the monitoring valve, ~~(71)~~

the force element is a spring ~~(59)~~ and the pushing force of the spring ~~(59)~~ is adjustable.

13. (Currently Amended) A rock drilling arrangement as claimed in ~~any one of claims 9 to 12~~ claim 9, ~~characterized in that~~ wherein, in the monitoring valve, ~~(56, 71)~~

the second end of the slide ~~(91)~~ is arranged tightly to a bore ~~(93)~~ in the body ~~(90)~~,

the pressure of the controllable channel ~~(108)~~ is arranged to act on the end surface of the second end of the slide ~~(91)~~,

the bore ~~(93)~~ is connected to at least one transverse discharge channel ~~(110)~~, and

the second end of the slide ~~(91)~~ is arranged to open and close the connection between the controllable channel ~~(108)~~ and discharge channel ~~(110)~~.

14. (Currently Amended) A rock drilling arrangement comprising:

a rock drill machine ~~(1)~~ including a percussion device ~~(7, 25)~~ arranged to generate impact pulses to a tool ~~(12)~~ to be connected to the rock drill machine ~~(1)~~;

a feed beam ~~(2)~~ whereon the rock drill machine ~~(1)~~ has been arranged;

a feed actuator ~~(3, 33)~~ enabling the rock drill machine ~~(1)~~ to be moved in the longitudinal direction of the feed beam ~~(2)~~;

a pressure medium system comprising: at least one pressure source; at least one pressure medium channel ~~(13, 14, 24)~~ leading to the percussion device ~~(7, 25)~~; at least one feed channel ~~(4, 5, 37, 38)~~ connected to the feed actuator ~~(3, 33)~~; and means for adjusting a percussion pressure, ~~characterized in that~~ wherein

the arrangement comprises at least one adjustment unit ~~(34)~~ for controlling the feed actuator ~~(33)~~,

at least two relief valves ~~(63, 64)~~ arranged in series in load-sense channel ~~(43)~~ of the adjustment unit ~~(34)~~,

at least one restrictor ~~(46)~~ connected to the inlet feeding channel of the feed actuator ~~(33)~~,

the arrangement comprises means for controlling the pressure difference between the inlet feeding channel of the feed actuator ~~(33)~~ and a reference pressure sensed in-between the mentioned two relief valves ~~(63, 64)~~ in the load-sense circuit of the adjustment unit ~~(34)~~ of the feed actuator ~~(33)~~,

the reference pressure in-between the two relief-valves ~~(63, 64)~~ is sensed,

the pressure after the restrictor ~~(46)~~ is sensed, and

the arrangement comprises a control system which is arranged to decrease the percussion pressure when the pressure difference between the above-mentioned sensed pressures decreases.

15. (Currently Amended) A rock drilling arrangement as claimed in claim 14, ~~characterized in that~~ wherein the restrictor ~~(46)~~ is adjustable.

16. (Currently Amended) A rock drilling arrangement as claimed in claim 14, ~~characterized in that~~ wherein the restrictor ~~(46)~~ has fixed settings.